

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 06-188150
(43)Date of publication of application : 08.07.1994

(51)Int.Cl. H01G 9/00
H01G 9/12
H01L 33/00

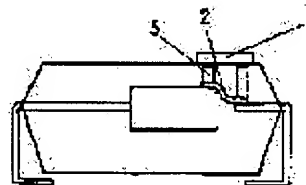
(21)Application number : 04-341845 (71)Applicant : HITACHI LTD
(22)Date of filing : 22.12.1992 (72)Inventor : TAKAYAMA YUJI

(54) ELECTRONIC COMPONENT

(57)Abstract:

PURPOSE: To visually observe a display element by installing it on the enclosure part of a tantalum capacitor provided with a fuse so that the abnormality of the inside can be notified.

CONSTITUTION: Electrodes used to mount a two-color LED 1 are installed on both ends of a fuse 2 at the inside of a tantalum capacitor, the fuse 2 is connected in parallel with the two-color LED 1. The LED is displayed when the capacitor is connected reversely and a protective element functions. Thereby, since the display element is displayed when the capacitor is connected reversely and the protective element functions, the efficiency of an inspection and a repair is made excellent.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or

application converted registration]

[Date of final disposal for application]

[Patent number]


[Date of registration]

[Number of appeal against examiner's
decision of rejection]

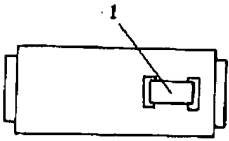
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Drawing selection 

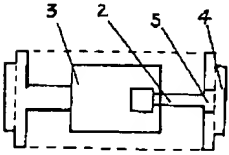
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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the sectional view of the tantalum condenser concerning one example of this invention.

[Drawing 2] It is the perspective drawing seen from [of the tantalum condenser of drawing 1] the top face.

[Drawing 3] It is drawing having shown the interior of a case of the top face of the tantalum condenser of drawing 1 .

[Description of Notations]

1 [-- An electrode, 5 / -- Electrode for LED mounting.] -- LED, 2 -- A fuse, 3 -- A contact, 4

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to a tantalum condenser with abnormality display capabilities which is applied to the tantalum condenser used for an electronic instrument, especially is displayed at the time of protection component actuation at the time of reverse connection.

[0002]

[Description of the Prior Art] The electronic parts which are generally polar have the distinguishing mark which shows a direction in protection against reverse connection. As a distinguishing mark, a crevice is established in a part of bill-of-materials side, or there is an example which is printing the round mark of a minor diameter in ink. Generally these distinguishing marks were small and its especially dark location was not enough as visibility. Moreover, since a help intervened at the time of the element placement to a printed circuit board, a direction may be carried accidentally and this had become the cause of product manufacture yield lowering. It is the cause which takes and overlooks the primitive approach of or [it views conventionally]. Furthermore, the capacitor short-circuited the tantalum condenser with a fuse according to degradation of a tantalum component or other causes, and the fuse component as a protection component melted it, and it had prevented breakage of a capacitor.

[0003]

[Problem(s) to be Solved by the Invention] In order for an appearance not to have to show whether the fuse melted or not and to have to discover failure components for a circuit by a circuit tester etc. later on conventionally, failure analysis took the long time. The object of this invention is to offer the tantalum condenser which raised the visibility of the abnormality display at the time of reverse connection and protection component actuation.

[0004]

[Means for Solving the Problem] This invention connects light emitting diode (LED) to the fuse of a tantalum condenser with a fuse electrically at juxtaposition at juxtaposition, and the display of light emitting diode enables it to check it by looking from the exterior. As light emitting diode, the two-color light emitting diode from which the luminescent color differs according to the direction of a current may be used.

[0005]

[Function] Although a current flows at a fuse in the time of the usual forward connection by making a fuse and LED juxtaposition, since a fuse is low resistance, at the time of fusing of a fuse which does not turn on the fuse inter-electrode potential difference since it is sufficiently small compared with the burning electrical potential difference of LED, LED lights up and fuse ** is told. Although it cannot distinguish from the front face of electronic parts when it was the former and fuse ** is carried out, sweet red bean soup with mochi can do the abnormalities of a protection component by attaching a display device (LED) on the surface of electronic parts. In addition, it is getting to know the condition of a protection component by using the case section as transparent mould resin, and the interior of a case being transparent and making it visible from the exterior as an approach of getting to know the condition

of a protection component.

[0006]

[Example] This invention takes a tantalum condenser with a fuse for an example, and explains it using drawing. Drawing 1 is drawing which looked at the tantalum condenser with a fuse from width, and in order to connect the fuse 2 and LED1 by the side of a minus pole to juxtaposition, it is drawing which takes out the electrode electrically connected to fuse ends to a case front face, and is carrying out the surface mount of LED1 for surface mounts to the case front face. LED1 is turned on using LED1 which divides into two colors and emits light according to the direction of a current at the time of reverse connection and a protection component function. Drawing 2 is drawing seen from the top face of a tantalum condenser, and mounts the 2 color LED for surface mounts in the minus pole side of a tantalum condenser. Drawing 3 is drawing which looked at the interior of a case from the top face of a tantalum condenser. A fuse 2 gets down from close between the tantalum component 3 and the minus electrode 4, the electrode 5 for equipping the front face of a case with LED for surface mounts from the ends of the fuse is formed, and it equips with LED.

[0007]

[Effect of the Invention] To polar electronic parts or electronic parts with a protection component, this effect of the invention is large. For example, if a tantalum condenser is taken for an example, that the time of reverse connection and a protection component function is known cannot have the improvement in the fundamental engine performance of a tantalum condenser directly, but when finding out a defect's components out of the components of a mounting beam many to a substrate, by measuring actuation etc. with a measuring instrument etc. shows in what kind of condition it is only by viewing a tantalum condenser. Thus, considering the efficiency of inspection of discovering a tantalum condenser being faulty out of many electronic parts, and reattaching a tantalum condenser, and repair, it is effectiveness size to attach a display device to the body part of the tantalum condenser in this invention.

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CLAIMS

[Claim(s)]

[Claim 1] Electronic parts characterized by mounting a display device (light emitting diode) in the front face of electronic parts with a polarity and a direction, connecting with it electrically inside, and displaying a display device at the time of reverse connection.

[Claim 2] Electronic parts which are the electronic parts which have a protection component and were characterized by displaying a display device when a protection component operates.

[Claim 3] They are the electronic parts characterized by the display of reverse connection and the electronic parts with a protection component being tantalum condensers in electronic parts according to claim 1 or 2.

[Claim 4] Electronic parts characterized by changing the foreground color at the time of reverse connection and protection component actuation.

[Translation done.]

(19)日本国特許庁(JP)

(12)公開特許公報(A)

(11)特許出願公開番号

特開平6-188150

(43)公開日 平成6年(1994)7月8日

(51)Int.Cl. ⁵	識別記号	庁内整理番号	F I	技術表示箇所
H 0 1 G 9/00	3 1 1	7924-5E		
9/12	C	7924-5E		
H 0 1 L 33/00	L	7376-4M		
	N	7376-4M		

審査請求 未請求 請求項の数4(全 3 頁)

(21)出願番号 特願平4-341845

(22)出願日 平成4年(1992)12月22日

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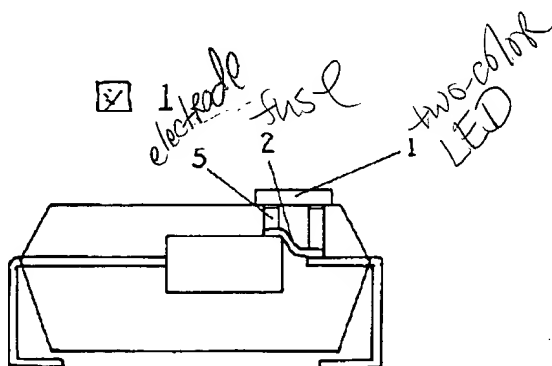
(54)【発明の名称】 電子部品

(57)【要約】

【目的】ヒューズ付きタンタルコンデンサの筐体部上に内部の異常をしらせるため表示素子を設け目視できるようにすること。

【構成】構成はタンタルコンデンサの内部でヒューズ2の両端に2色LED1を装着するための電極を設けヒューズ2と2色LED1を並列に接続することにより、逆接続と保護素子機能時に表示する。

【効果】逆接続した時と保護素子機能時に表示素子を表示させることで検査及び修理の効率を良くする効果がある。



【特許請求の範囲】

【請求項1】極性及び方向のある電子部品の表面に表示素子（発光ダイオード）を実装して内部で電氣的に接続し、逆接続時に表示素子を表示させることを特徴とした電子部品。

【請求項2】保護素子を有する電子部品であって、保護素子が作動したとき表示素子を表示することを特徴とした電子部品。

【請求項3】請求項1又は2に記載の電子部品において、逆接続の表示と保護素子付の電子部品はタンタルコンデンサであることを特徴とした電子部品。

【請求項4】逆接続時と保護素子作動時の表示色を変えたことを特徴とした電子部品。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、電子装置に使用するタンタルコンデンサに係り、特に逆接続時、保護素子作動時に表示するような異常表示機能付タンタルコンデンサに関する。

【0002】

【従来の技術】一般に極性がある電子部品は逆接続防止用に方向を示す表示マークがある。表示マークとしては部品表面の一部に凹部を設けたり、インクで小径の丸印を印刷している例がある。これらの表示マークは一般に小形であり、特に暗い場所では視認性が十分でなかった。また、プリント基板への部品搭載時に人手が介在するため、方向を誤って搭載してしまうことがあり、これが製品製造歩留り低下の一因となっていた。従来は目視するとかという原始的な方法をとって見落とす原因になっている。さらにヒューズ付きタンタルコンデンサは、タンタル素子の劣化やその他の原因によりコンデンサが短絡し保護素子としてのヒューズ素子が溶断してコンデンサの破損を防いでいた。

【0003】

【発明が解決しようとする課題】従来は、ヒューズが溶断したかどうかというのは外観からではわからなく、回路を追ってテストなどで故障部品を発見しなければならないため故障解析に長時間を要した。本発明の目的は、逆接続時や保護素子作動時の異常表示の視認性を高めたタンタルコンデンサを提供することにある。

【0004】

【課題を解決するための手段】本発明はヒューズ付きタンタルコンデンサのヒューズに並列に発光ダイオード（LED）を電氣的に並列に接続し、発光ダイオードの表示部が外部より視認できる様にする。発光ダイオードとして、電流の方向により発光色の異なる二色発光ダイオードを用いても良い。

【0005】

【作用】ヒューズとLEDを並列にすることにより通常の正接続時ではヒューズに電流が流れるがヒューズは低

抵抗であるためヒューズ電極間の電位差はLEDの点灯電圧に比べて十分小さいため点灯しない、ヒューズの溶断時はLEDが点灯しヒューズ断を知らせる。従来だとヒューズ断したときは電子部品の表面からでは判別できないが、電子部品の表面に表示素子（LED）を付けることにより保護素子の異常をすることができる。その他に保護素子の状態を知る方法として、筐体部を透明なモールド樹脂にし、外部から筐体内部が透けて見えるようにすることにより、保護素子の状態を知ることである。

【0006】

【実施例】本発明はヒューズ付きタンタルコンデンサを例にとり、図を用いて説明する。図1はヒューズ付きタンタルコンデンサを横から見た図であり、マイナス極側のヒューズ2とLED1を並列に接続するためにヒューズ両端に電氣的に接続した電極を筐体表面に出し表面実装用のLED1を筐体表面に表面実装している図である。LED1は電流の方向によって2つの色に分けて発光するLED1を用いて逆接続と保護素子機能時に点灯するものである。図2はタンタルコンデンサの上面から見た図であり、タンタルコンデンサのマイナス極側に表面実装用2色LEDを実装したものである。図3はタンタルコンデンサの上面から筐体内部を見た図である。タンタル素子3とマイナス電極4の間にヒューズ2が入っており、そのヒューズの両端から筐体の表面に表面実装用LEDを装着するための電極5を設けてLEDを装着する。

【0007】

【発明の効果】極性のある電子部品や保護素子のある電子部品にはこの発明の効果は大きい。たとえばタンタルコンデンサを例にとると逆接続と保護素子機能時に判るということは直接的にはタンタルコンデンサの基本的な性能の向上はありえないが、基板に取付けた多くの部品の中から不良の部品を見つけだす時には測定器等で動作等を測定することによりタンタルコンデンサを目視するだけでどのような状態にあるか判る。このように多くの電子部品の中からタンタルコンデンサが不良であるということを発見しタンタルコンデンサをつけかえるという検査及び修理の能率を考えると、この発明でのタンタルコンデンサの本体部分に表示素子を付けることは効果大である。

【図面の簡単な説明】

【図1】本発明の1実施例に係るタンタルコンデンサの断面図である。

【図2】図1のタンタルコンデンサの上面方向から見た透視図である。

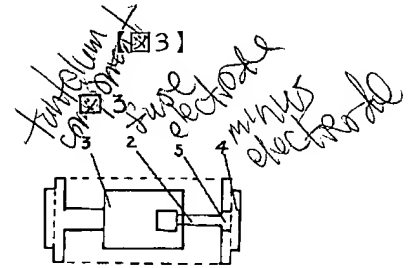
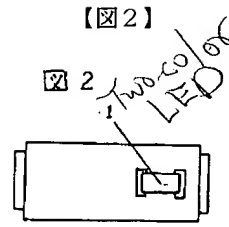
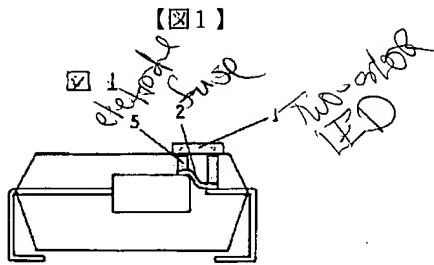
【図3】図1のタンタルコンデンサの上面の筐体内部を示した図である。

【符号の説明】

1…LED、2…ヒューズ、3…接点、4…電極、5…LED実装用電極。

(3)

特開平6-188150



PAT-NO: JP406188150A
DOCUMENT-IDENTIFIER: JP 06188150 A
TITLE: ELECTRONIC COMPONENT
PUBN-DATE: July 8, 1994

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APPL-NO: JP04341845
APPL-DATE: December 22, 1992

INT-CL (IPC): H01G009/00, H01G009/12 , H01L033/00
US-CL-CURRENT: 29/25.03

ABSTRACT:

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